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## PATENT ABSTRACTS OF JAPAN

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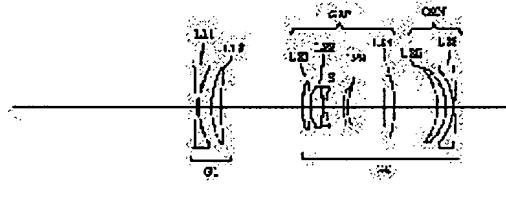
(21)Application number : 08-170608 (71)Applicant : NIKON CORP  
 (22)Date of filing : 10.06.1996 (72)Inventor : OTAKE MOTOYUKI

## (54) SWITCHING TYPE VARIABLE POWER OPTICAL SYSTEM

## (57)Abstract:

PROBLEM TO BE SOLVED: To suppress chromatic aberration and to obtain high optical performance from the center part of a picture to its periphery part while simplifying the structure of a lens-barrel by fixing the position of a 1st lens group and moving only the position of a 2nd lens group along its optical axis direction.

SOLUTION: The optical system is provided with a 1st lens group G1 having negative refracting power and a 2nd lens group G2 having positive refracting power arranged successively from the object side. When only the 2nd lens group G2 is moved along the optical axis direction without moving the 1st lens group G1 along the optical axis direction, the magnification of image formation is switched while holding an image surface at a fixed state. When the focal distance of the 1st lens group G1 is  $f_1$  and the focal distance of the 2nd lens group G2 is  $f_2$ , a condition of  $0.3 < f_2/f_1 < 0.5$  is satisfied. When the system exceeds the upper limit value of the condition, the divergent action of the 1st lens group G1 is strengthened and the whole length is extended, and when the system is reduced lower than the lower limit value, the divergent action of the 1st lens group G1 is weakened and out-of-axis beam is too separated from the optical axis.



## LEGAL STATUS

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